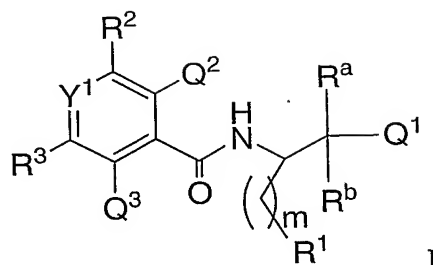


WHAT IS CLAIMED IS:

1. A compound of formula (I):



5 wherein

Y¹ is CH or N;

Q¹ is selected from the group consisting of

- 10 (1) -OH, and
(2) -NH₂;

Q² and Q³ independently selected from the group consisting of

- 15 (1) hydrogen, and
(2) halogen;

R^a is selected from the group consisting of

- 20 (1) hydrogen,
(2) -C₁₋₁₀ alkyl, wherein said alkyl is unsubstituted or substituted with one or more fluoro, and
(3) -C₃₋₈ cycloalkyl;

R^b is selected from the group consisting of

- 25 (1) hydrogen,
(2) -C₁₋₁₀ alkyl,
(3) -C₁₋₃ alkyl-aryl, wherein said aryl is selected from the group consisting of phenyl and naphthyl,
(4) -C₃₋₈ cycloalkyl,

wherein said cycloalkyl, alkyl and aryl are unsubstituted or substituted with

one or more

- (a) halo,
- (b) -OH,
- (c) -CN,
- (d) -O-C₁₋₁₀ alkyl,

(5) -(CH₂)_n-NR^cR^d wherein R^c and R^d are selected from the group consisting of hydrogen and C₁₋₁₀ alkyl, and n is 2, 3 or 4, and

(6) -(CH₂)_{n'}-O-R^e, wherein R^e is selected from the group consisting of

- (a) C₁₋₁₀ alkyl,
- (b) -C₀₋₃ alkyl-aryl, wherein said aryl is selected from the group consisting of phenyl and naphthyl, wherein said alkyl and aryl are unsubstituted or substituted with one or more
- (i) halo,
- (ii) -OH,
- (iii) -CN,
- (iv) -O-C₁₋₁₀ alkyl,

and n' is 1, 2, 3 or 4;

m is 1 or 2;

R¹ is (1) aryl selected from the group consisting of phenyl and naphthyl, or

(2) heteroaryl selected from the group consisting of pyrazinyl, pyrazolyl,

pyridazinyl, pyridyl, pyrimidinyl, pyrrolyl, tetrazolyl, furanyl, imidazolyl, triazinyl, pyranlyl, thiazolyl, thienyl, thiophenyl, triazolyl, oxazolyl, isoxazolyl, thiazolyl, oxadiazolyl, indolyl, quinolinyl, isoquinolinyl, benzimidazolyl and benzoxazolyl,

(3) -C₁₋₁₀ alkyl, and

(4) -C₃₋₈ cycloalkyl,

wherein said aryl, heteroaryl, alkyl and cycloalkyl is unsubstituted or substituted with one or more

- (a) halo,
- (b) -OH,
- (c) -CN,

- (d) $-O-C_{1-10}$ alkyl,
 (e) $-C_{1-10}$ alkyl,
 (f) $-C_{3-8}$ cycloalkyl,
 (g) aryl selected from the group consisting of phenyl and naphthyl, or
 (h) heteroaryl selected from the group consisting of pyrazinyl, pyrazolyl,
 pyridazinyl, pyridyl, pyrimidinyl, pyrrolyl, tetrazolyl, furanyl, imidazolyl,
 triazinyl, pyranyl, thiazolyl, thienyl, thiophenyl, triazolyl, oxazolyl,
 isoxazolyl, thiazolyl, oxadiazolyl, indolyl, quinolinyl, isoquinolinyl,
 benzimidazolyl and benzoxazolyl;

R^2 is selected from the group consisting of:

(1) $(R^4-SO_2)N(R^7)-$, wherein R^4 is

- (a) $-C_{1-10}$ alkyl,
 (b) $-C_{3-8}$ cycloalkyl,

wherein said alkyl and cycloalkyl is unsubstituted or substituted with one or more

- (i) halo,
 (ii) $-OH$,
 (iii) $-CN$,
 (iv) $-O-C_{1-10}$ alkyl,
 (v) $-C_{1-10}$ alkyl,
 (vi) $-C_{3-8}$ cycloalkyl,
 (vii) aryl selected from the group consisting of phenyl and naphthyl, or
 (viii) heteroaryl selected from the group consisting of pyrazinyl, pyrazolyl,
 pyridazinyl, pyridyl, pyrimidinyl, pyrrolyl, tetrazolyl, furanyl,
 imidazolyl, triazinyl, pyranyl, thiazolyl, thienyl, thiophenyl, triazolyl,
 oxazolyl, isoxazolyl, thiazolyl, oxadiazolyl, indolyl, quinolinyl,
 isoquinolinyl, benzimidazolyl and benzoxazolyl;

and said aryl and heteroaryl is unsubstituted or substituted with one or more

- (A) halo,
 (B) $-OH$,
 (C) $-CN$,
 (D) $-O-C_{1-10}$ alkyl,

(E) -C₃₋₈ cycloalkyl, or

(F) -C₁₋₁₀ alkyl,

(c) heteroaryl selected from the group consisting of pyrazinyl, pyrazolyl, pyridazinyl, pyridyl, pyrimidinyl, pyrrolyl, tetrazolyl, furanyl, imidazolyl, triazinyl, pyranyl, thiazolyl, thienyl, thiophenyl, triazolyl, oxazolyl, isoxazolyl, thiazolyl, oxadiazolyl, indolyl, quinoliny, isoquinoliny, benzimidazolyl and benzoxazolyl,

wherein said heteroaryl is unsubstituted or substituted with one or more

(i) halo,

(ii) -OH,

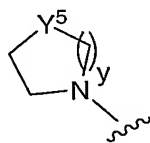
(iii) -CN,

(iv) -O-C₁₋₁₀ alkyl,

(v) -C₃₋₈ cycloalkyl, or

(vi) -C₁₋₁₀ alkyl,

(d) -(CH₂)_x-NR^fR^g wherein R^f and R^g are selected from the group consisting of hydrogen and C₁₋₁₀ alkyl, and x is 0, 1, 2, 3 or 4, or R^f and R^g, together with the nitrogen atom to which they are attached form the group



wherein y is 1 or 2, Y⁵ is -CHR²¹, -O- or NR²¹, wherein R²¹ is selected from the group consisting of;

(i) hydrogen, and

(ii) C₁₋₁₀ alkyl,

wherein said alkyl is unsubstituted or substituted with one or more

(A) halo,

(B) -OH,

(C) -CN,

(D) $-O-C_{1-10}$ alkyl, or

(E) $-C_{3-8}$ cycloalkyl;

R⁷ is selected from the group consisting of

(a) hydrogen, and

(b) $-C_{1-10}$ alkyl,

(c) aryl selected from the group consisting of phenyl and naphthyl, or

(d) heteroaryl selected from the group consisting of pyrazinyl, pyrazolyl, pyridazinyl, pyridyl, pyrimidinyl, pyrrolyl, tetrazolyl, furanyl, imidazolyl, triazinyl, pyranyl, thiazolyl, thienyl, thiophenyl, triazolyl, oxazolyl, isoxazolyl, thiazolyl, oxadiazolyl, indolyl, quinolinyl, isoquinolinyl, benzimidazolyl and benzoxazolyl

wherein said alkyl, aryl and heteroaryl is unsubstituted or substituted with one or more

(i) halo,

(ii) $-OH$,

(iii) $-CN$,

(iv) $-O-C_{1-10}$ alkyl,

(v) $-C_{3-8}$ cycloalkyl,

(vi) aryl selected from the group consisting of phenyl and naphthyl, or

(vii) heteroaryl selected from the group consisting of pyrazinyl, pyrazolyl, pyridazinyl, pyridyl, pyrimidinyl, pyrrolyl, tetrazolyl, furanyl, imidazolyl, triazinyl, pyranyl, thiazolyl, thienyl, thiophenyl, triazolyl, oxazolyl, isoxazolyl, thiazolyl, oxadiazolyl, indolyl, quinolinyl, isoquinolinyl, benzimidazolyl and benzoxazolyl,

wherein said cycloalkyl, aryl or heteroaryl is unsubstituted or substituted with one or more

(A) halo,

(B) $-OH$,

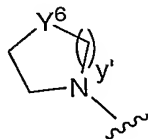
(C) $-CN$,

(D) $-O-C_{1-10}$ alkyl,

(E) $-C_{3-8}$ cycloalkyl, or

(F) aryl selected from the group consisting of phenyl and naphthyl;

(e) $-(CH_2)_{y'}-NR^hR^i$ wherein R^h and R^i are selected from the group consisting of hydrogen and C_{1-10} alkyl, and y' is 1, 2, 3 or 4, or R^h and R^i , together with the nitrogen atom to which they are attached from the group



wherein y' is 1 or 2, Y^6 is $-CHR^{22}$, $-O-$ or NR^{22} , wherein R^{22} is selected from the group consisting of;

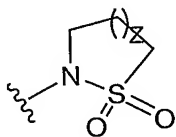
- (i) hydrogen, and
- (ii) C_{1-10} alkyl,

wherein said alkyl is unsubstituted or substituted with one or more

- (A) halo,
- (B) $-OH$,
- (C) $-CN$,
- (D) $-O-C_{1-10}$ alkyl, or
- (E) $-C_{3-8}$ cycloalkyl,

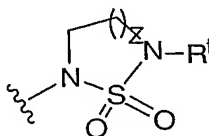
or R^4 and R^7 are linked together to form the group

(a)



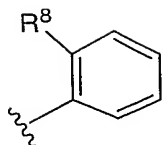
wherein z is 1, 2 or 3; or

(b)



wherein z is 1, 2 or 3

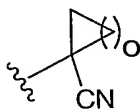
(2)



wherein R⁸ is selected from the group consisting of

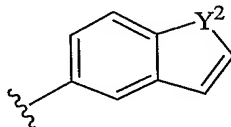
- (a) -CN,
- (b) hydrogen, and
- (c) tetrazolyl;

(3)



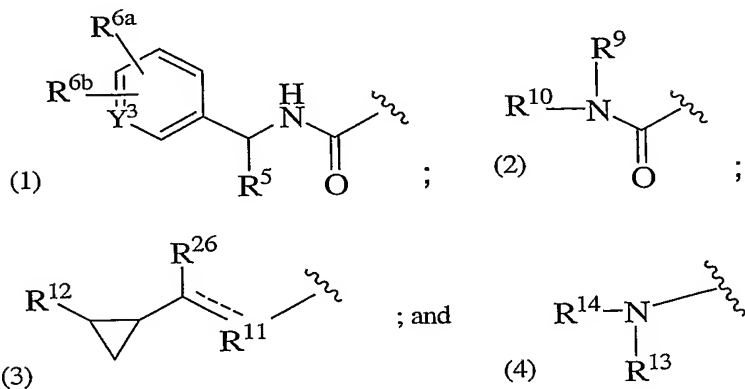
wherein o is 1, 2, 3 or 4; and

(4)



wherein Y² is -NH=CH- or -CH=NH-;

R³ is selected from the group consisting of



wherein Y^3 is CR^{6c} or N;

R^5 is C_{1-10} alkyl or C_{1-2} perfluoroalkyl;

5 R^{6a} , R^{6b} , and R^{6c} are independently selected from the group consisting of:

- 10 (1) hydrogen,
 (2) halo,
 (3) $-C_{1-10}$ alkyl,
 (4) $-OH$,
 (5) $-CN$,
 (6) $-C_{3-8}$ cycloalkyl, and
 (7) $-O-C_{1-10}$ alkyl;

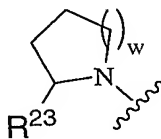
15 R^9 and R^{10} are independently selected from the group consisting of

- (1) hydrogen,
 (2) $-C_{1-10}$ alkyl, and
 (3) $-C_{3-8}$ cycloalkyl,

wherein said alkyl and cycloalkyl are unsubstituted or substituted with one or more

- 20 (a) halo,
 (b) $-OH$,
 (c) $-CN$,
 (d) $-O-C_{1-10}$ alkyl,
 (e) $-C_{3-8}$ cycloalkyl, and
 25 (f) $-NR^j R^k$ wherein R^j and R^k are C_{1-10} alkyl;

or R^9 and R^{10} are joined together with the nitrogen atom to which they are attached to form



30 wherein w is 1, 2 or 3, and

R²³ is selected from the group consisting of

- (a) hydrogen,
- (b) -C₁₋₁₀ alkyl,
- (c) -C₃₋₈ cycloalkyl,
- (d) -C₂₋₁₀ alkenyl,
- (e) -C₂₋₁₀ alkynyl,
- (f) -(CH₂)_p-phenyl,
- (g) -(CH₂)_p-heteroaryl, wherein said heteroaryl is selected from the group consisting of
pyrazinyl, pyrazolyl, pyridazinyl, pyridyl, pyrimidinyl, pyrrolyl, tetrazolyl, furanyl,
imidazolyl, triazinyl, pyranyl, thiazolyl, thienyl, thiophenyl, triazolyl, oxazolyl,
isoxazolyl, thiazolyl, oxadiazolyl, indolyl, quinoliny, isoquinoliny, benzimidazolyl and
benzoxazolyl,

wherein p is 0 or 1, and

wherein said alkyl, alkenyl, alkynyl, cycloalkyl, phenyl and heteroaryl is unsubstituted or substituted with one or more

- (i) halo,
- (ii) -C₁₋₁₀ alkyl,
- (iii) -OH,
- (iv) -CN,
- (v) -C₃₋₈ cycloalkyl, or
- (vi) -O-C₁₋₁₀ alkyl;

R¹¹ is selected from the group consisting of

- (1) -CH-
- (2) -CH₂-,
- (3) -O-, and

(4) -NR¹⁷-,

provided that when R¹¹ is -CH- the dotted line forms a bond and when R¹¹ is -CH₂-,
-O- or -NR¹⁷- the dotted line is absent;

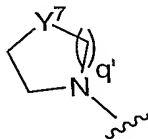
R¹⁷ is hydrogen or C₁₋₁₀ alkyl, wherein said C₁₋₁₀ alkyl is unsubstituted or substituted with one or more

- (a) halo,
- (b) -OH,
- (c) -CN,
- (d) -C₃₋₈ cycloalkyl,
- (e) -O-C₁₋₁₀ alkyl,
- (f) -(CH₂)_q-phenyl, wherein q is 1 or 2, and
- (g) -NR¹⁸R¹⁹, and

wherein R¹⁸ and R¹⁹ are independently selected from the group consisting of

- (i) hydrogen, or
- (ii) C₁₋₁₀ alkyl;

or R¹⁸ and R¹⁹, together with the nitrogen atom to which they are attached, form the group



wherein q' is 1 or 2, Y⁷ is -CHR²⁴, -O- or NR²⁴, wherein R²⁴ is selected from the group consisting of;

- (c) hydrogen, and
- (d) C₁₋₁₀ alkyl,

wherein said alkyl is unsubstituted or substituted with one or more

- (i) halo,
- (ii) -OH,
- (iii) -CN,
- (iv) -O-C₁₋₁₀ alkyl, or
- (v) -C₃₋₈ cycloalkyl;

R²⁶ is selected from the group consisting of

- (1) hydrogen,
- (2) -C₁₋₃ alkyl;

R¹² is selected from the group consisting of

- (1) hydrogen,
- (2) -C₁₋₁₀ alkyl, wherein said alkyl is unsubstituted or substituted with one or more

- 5 (a) halo,
- (b) -OH,
- (c) -CN,
- (d) -C₃₋₈ cycloalkyl,
- (e) -O-C₁₋₁₀ alkyl, or
- 10 (f) -NH₂,

- (3) halo,
- (4) -C₃₋₈ cycloalkyl,
- (5) aryl selected from the group consisting of phenyl and naphthyl, and
- (6) heteroaryl selected from the group consisting of pyrazinyl, pyrazolyl,
- 15 pyridazinyl, pyridyl, pyrimidinyl, pyrrolyl, tetrazolyl, furanyl, imidazolyl,
- triazinyl, pyranyl, thiazolyl, thienyl, thiophenyl, triazolyl, oxazolyl,
- isoxazolyl, thiazolyl, oxadiazolyl, indolyl, quinolinyl, isoquinolinyl,
- benzimidazolyl and benzoxazolyl,

20 wherein said aryl and heteroaryl is unsubstituted or substituted with one or more

- (a) halo,
- (b) -OH,
- (c) -CN,
- (d) -O-C₁₋₁₀ alkyl,
- 25 (e) -C₃₋₈ cycloalkyl, or
- (f) -C₁₋₁₀ alkyl;

R¹³ is selected from the group consisting of

- 30 (1) hydrogen,
- (2) C₁₋₁₀ alkyl, and
- (3) -C₃₋₈ cycloalkyl;

wherein said alkyl and cycloalkyl is unsubstituted or substituted with one or more

- (a) halo,
- (b) -OH,

- (c) -CN,
- (d) -C₃₋₈ cycloalkyl,
- (e) -O-C₁₋₁₀ alkyl, and
- (f) -C₁₋₁₀ alkyl;

5

R¹⁴ is selected from the group consisting of

- (1) -C₁₋₁₀ alkyl, and
- (2) -C₃₋₈ cycloalkyl;

wherein said alkyl and cycloalkyl is unsubstituted or substituted with one or more

10

- (a) halo,
- (b) -OH,
- (c) -CN,
- (d) -C₃₋₈ cycloalkyl,
- (e) -O-C₁₋₁₀ alkyl, or
- (f) -C₁₋₁₀ alkyl;

15

- (3) -(CH₂)_v-NR¹⁵R¹⁶, wherein v is 2, 3 or 4, and

wherein R¹⁵ and R¹⁶ are independently selected from the group consisting of

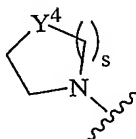
- a) hydrogen, or
- b) C₁₋₁₀ alkyl, wherein said C₁₋₁₀ alkyl is unsubstituted or substituted with one or more

20

- (i) halo,
- (ii) -OH,
- (iii) -CN,
- (iv) -C₃₋₈ cycloalkyl, or
- (v) -O-C₁₋₁₀ alkyl;

25

or R¹⁵ and R¹⁶, together with the nitrogen atom to which they are attached, form the group



30

wherein s is 1 or 2, Y⁴ is -CHR²⁴-, -O- or -NR²⁴-, wherein R²⁴ is selected from the group consisting of

- (i) hydrogen, and
- (ii) C₁₋₁₀ alkyl,

wherein said alkyl is unsubstituted or substituted with one or more

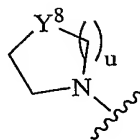
- (A) halo,
- (B) -OH,
- (C) -CN,
- (D) -O-C₁₋₁₀ alkyl, or
- (E) -C₃₋₈ cycloalkyl,

4) -(CH₂)_r-phenyl, wherein r is 1, 2, 3, or 4, and

wherein said phenyl is unsubstituted or substituted with one or more

- (a) halo,
- (b) -OH,
- (c) -CN,
- (d) -O-C₁₋₁₀ alkyl,
- (e) -C₃₋₈ cycloalkyl, or
- (f) -C₁₋₁₀ alkyl;

or R¹³ and R¹⁴, together with the nitrogen atom to which they are attached, form the group



wherein u is 1 or 2, Y⁸ is -CHR²⁵-, -O- or -NR²⁵-, wherein R²⁵ is selected from the group consisting of

- (a) hydrogen,
- (b) C₁₋₁₀ alkyl,
- (c) -(CH₂)_t-phenyl,
- (d) -(CH₂)_t-heteroaryl, wherein said heteroaryl is selected from the group consisting of pyrazinyl, pyrazolyl, pyridazinyl, pyridyl, pyrimidinyl, pyrrolyl, tetrazolyl, furanyl, imidazolyl, triazinyl, pyranlyl, thiazolyl, thienyl, thiophenyl, triazolyl, oxazolyl,

isoxazolyl, thiazolyl, oxadiazolyl, indolyl, quinolinyl,
isoquinolinyl, benzimidazolyl and benzoxazolyl,

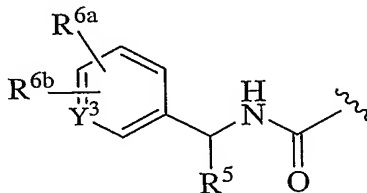
wherein t is 0 or 1, and

wherein said alkyl, phenyl and heteroaryl is unsubstituted or substituted
with one or more

- (i) halo,
- (ii) -C₁₋₁₀ alkyl,
- (iii) -OH,
- (iv) -CN,
- (v) -C₃₋₈ cycloalkyl, or
- (vi) -O-C₁₋₁₀ alkyl;

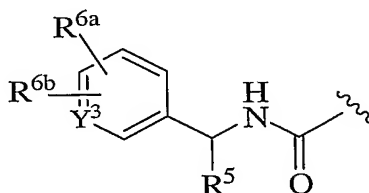
and pharmaceutically acceptable salts thereof.

2. The compound of Claim 1 wherein R^a and R^b are both hydrogen.
3. The compound of Claim 1 wherein R^a is hydrogen and R^b is C₁₋₁₀ alkyl.
4. The compound of Claim 1 wherein m is 1 and R¹ is selected from the group consisting
of
(1) phenyl, unsubstituted or substituted in one or two positions with halo; and
(2) thienyl.
5. The compound of Claim 1 wherein R² is (R⁴-SO₂)N(R⁷)-.
6. The compound of Claim 5 wherein R⁴ and R⁷ are each C₁₋₆alkyl.
7. The compound of Claim 1 wherein R³ is (1)



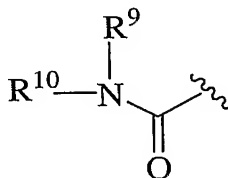
wherein Y^3 is CHR^{6c} , R^5 is methyl, R^{6a} and R^{6c} are hydrogen and R^{6b} is fluoro.

8. The compound of Claim 1 wherein R^3 is (1)

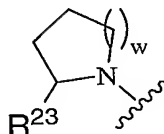


- 5 Y^3 is N, R^5 is C_{1-2} perfluoroalkyl, and R^{6a} and R^{6b} are hydrogen.

9. The compound of Claim 1 wherein R^3 is (2)



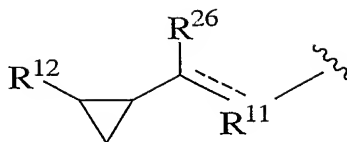
- and R^9 and R^{10} are each unsubstituted C_{1-10} alkyl, or R^9 and R^{10} are joined together with the nitrogen atom to which they are attached to form attached to form



wherein w is 1;

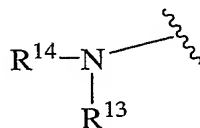
- 15 R^{23} is $-(CH_2)_p$ -phenyl or $-(CH_2)_p$ -heteroaryl, wherein said heteroaryl is selected from the group consisting of pyrazinyl, pyrazolyl, pyridazinyl, pyridyl, pyrimidinyl, pyrrolyl, tetrazolyl, furanyl, imidazolyl, triazinyl, pyranal, thiazolyl, thienyl, thiophenyl, triazolyl, oxazolyl, isoxazolyl, thiazolyl, oxadiazolyl, indolyl, quinolinyl, isoquinolinyl, benzimidazolyl and benzoxazolyl,
- 20 wherein the phenyl and heteroaryl are unsubstituted or substituted with one or more chloro, and p is 0.

10. The compound of Claim 1 wherein R^3 is (3)



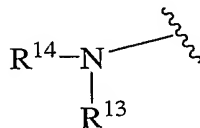
R¹¹ is NR¹⁷ wherein R¹⁷ is hydrogen or C₁₋₃ alkyl, and R¹² is hydrogen or methyl.

11. The compound of Claim 1 wherein R³ is (4)

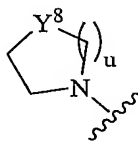


R¹³ is hydrogen and R¹⁴ is -(CH₂)_v-NR¹⁵R¹⁶ wherein v is 2 and R¹⁵ and R¹⁶ are each C₁₋₁₀ alkyl, which is unsubstituted or substituted with -OH, -CN or -OCH₃.

12. The compound of Claim 1 wherein R³ is (4)

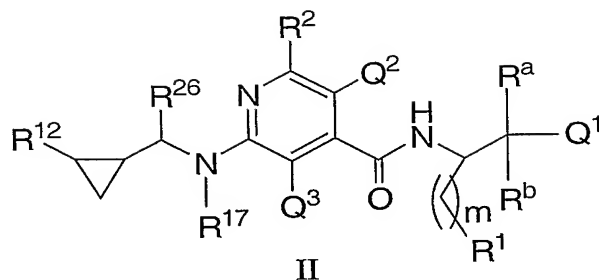


wherein R¹³ and R¹⁴, together with the nitrogen atom to which they are attached, form the group



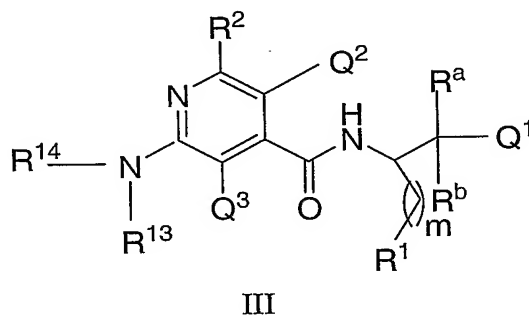
wherein u is 1 or 2, Y⁸ is -CHR²⁵-, -O- or -NR²⁵-.

13. The compound of Claim 1 which is a compound of formula (II)



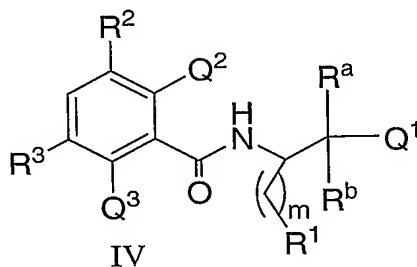
wherein Q¹, Q², Q³, R^a, R^b, R¹, R², R¹², R¹⁷, R²⁶ and m are as defined in Claim 1, and pharmaceutically acceptable salts thereof.

- 5 14. The compound of Claim 1 which is a compound of formula (III)



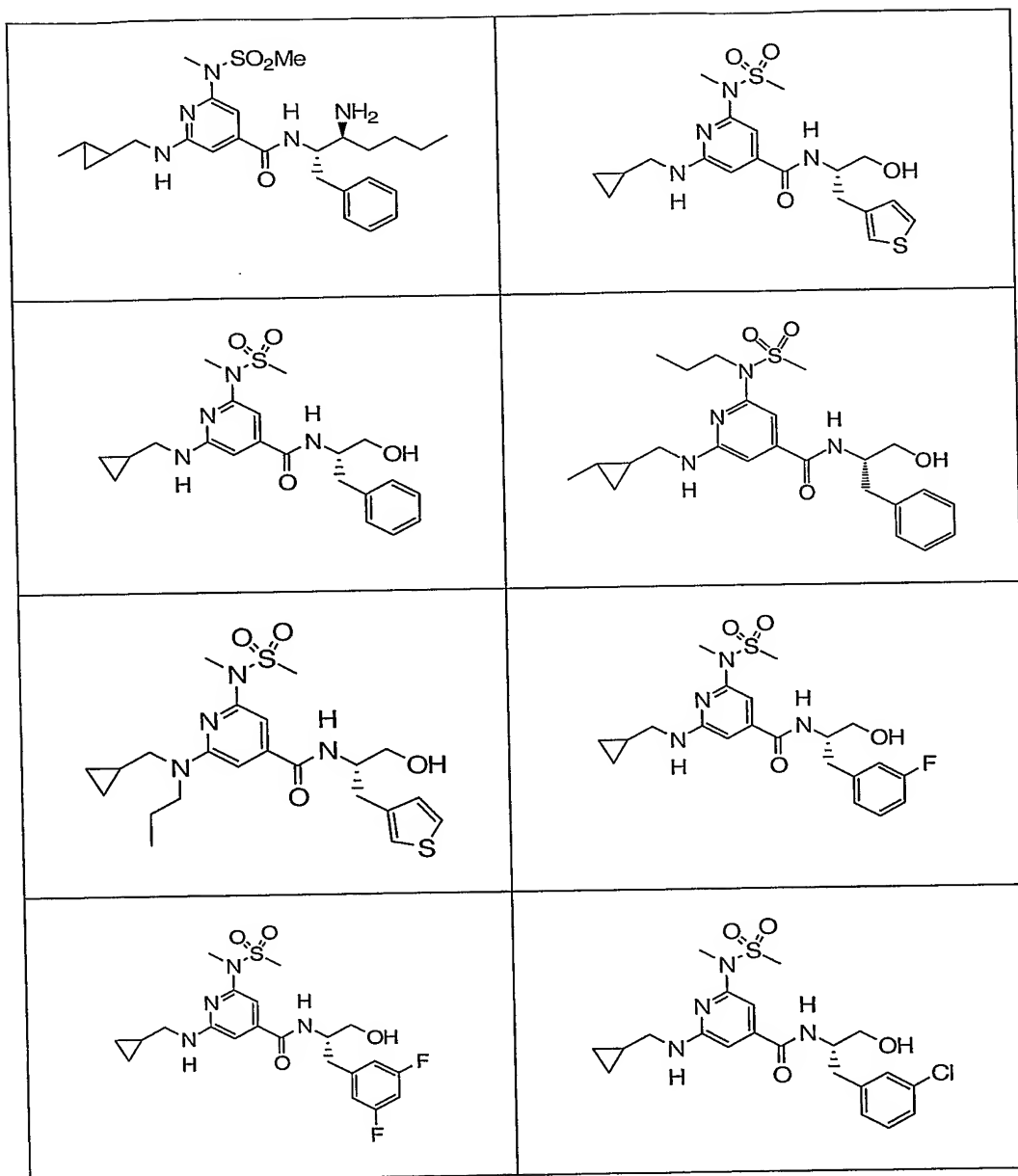
wherein Q¹, Q², Q³, R^a, R^b, R¹, R², R¹³, R¹⁴ and m are defined as in Claim 1, and pharmaceutically acceptable salts thereof.

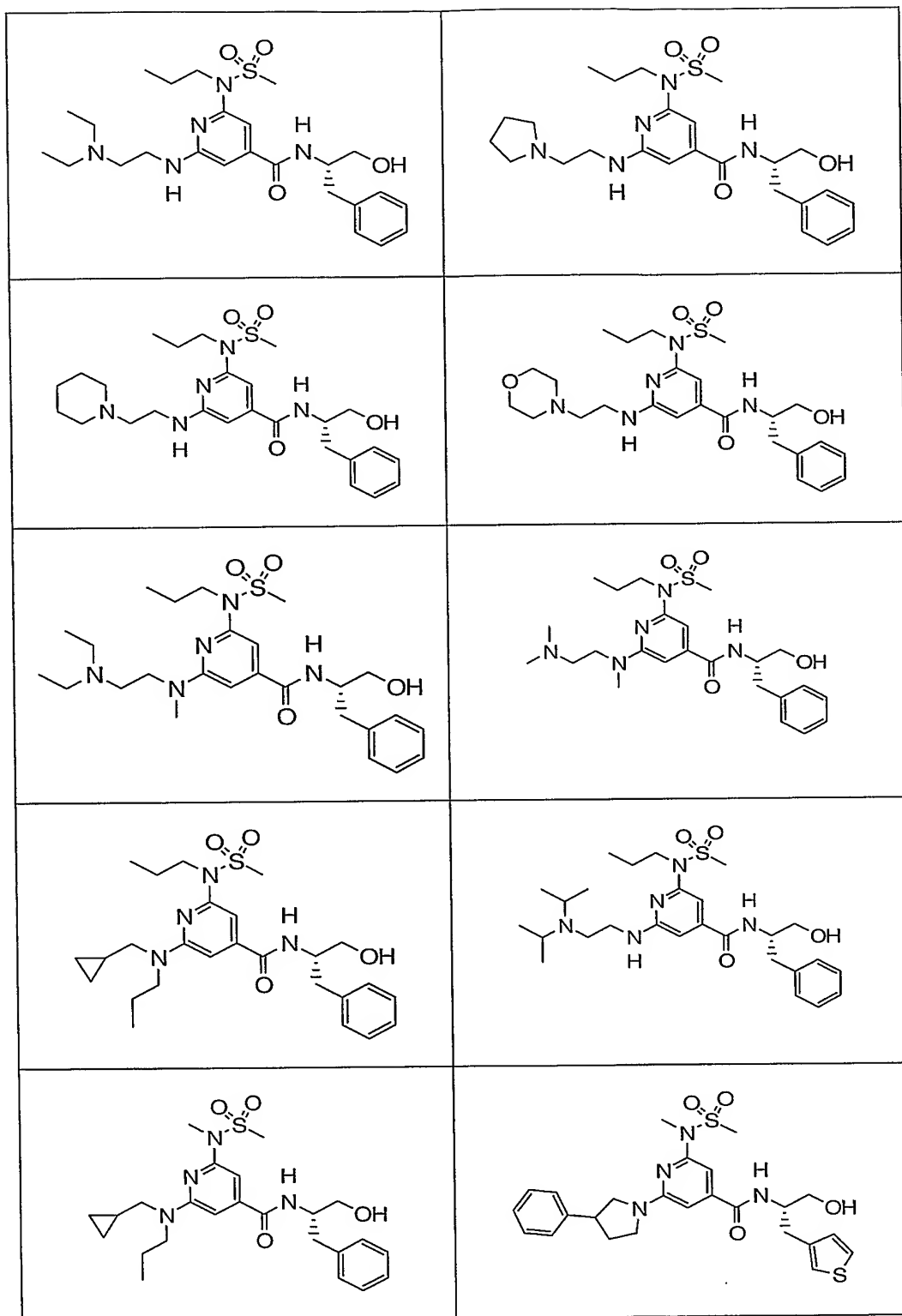
- 10 15. The compound of Claim 1 which is a compound of formula (IV):

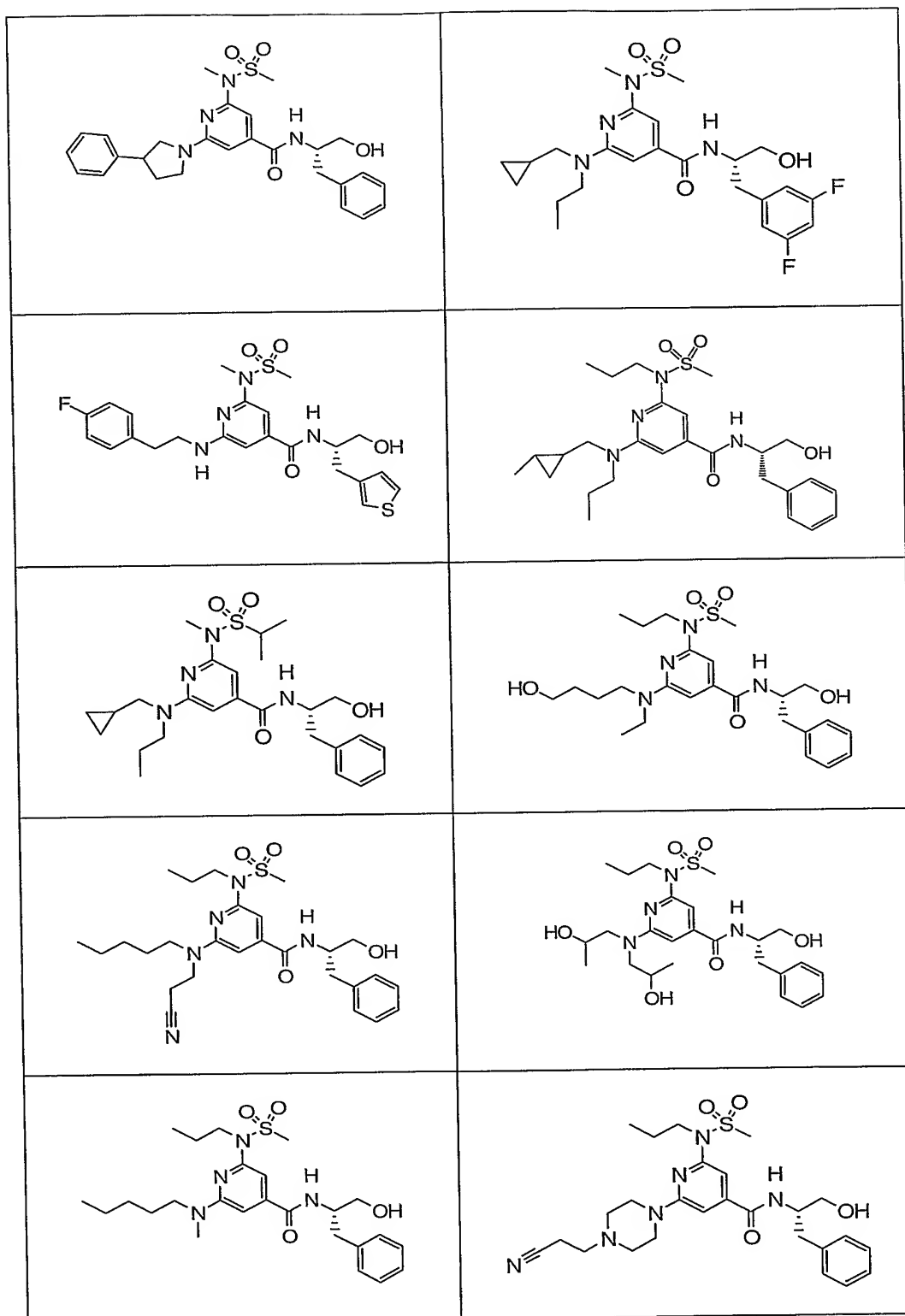


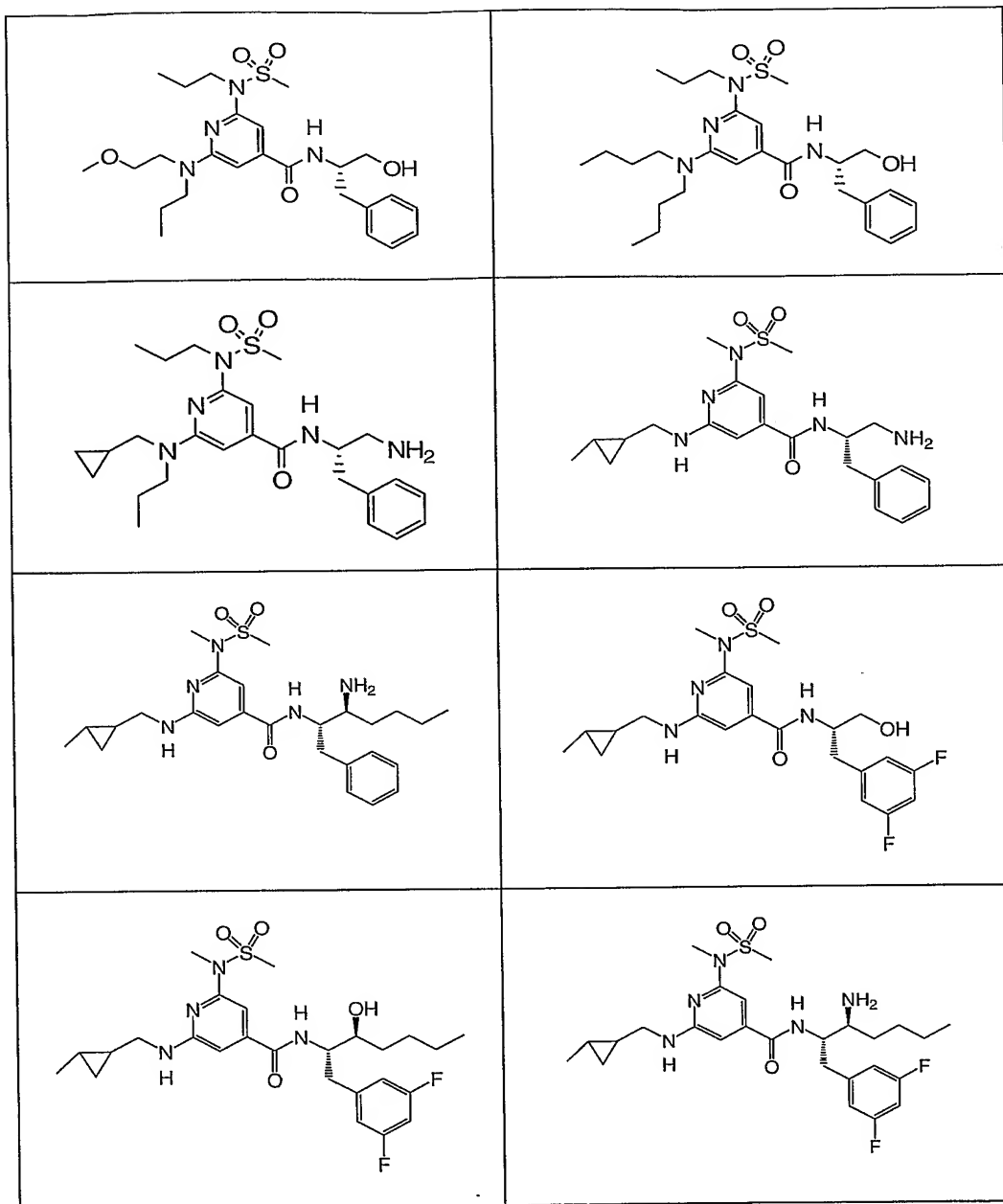
wherein Q¹, Q², Q³, R^a, R^b, R¹, R² and m are as defined in Claim 1, and R³ is (1) or (2) as defined in Claim 1, and pharmaceutically acceptable salts thereof.

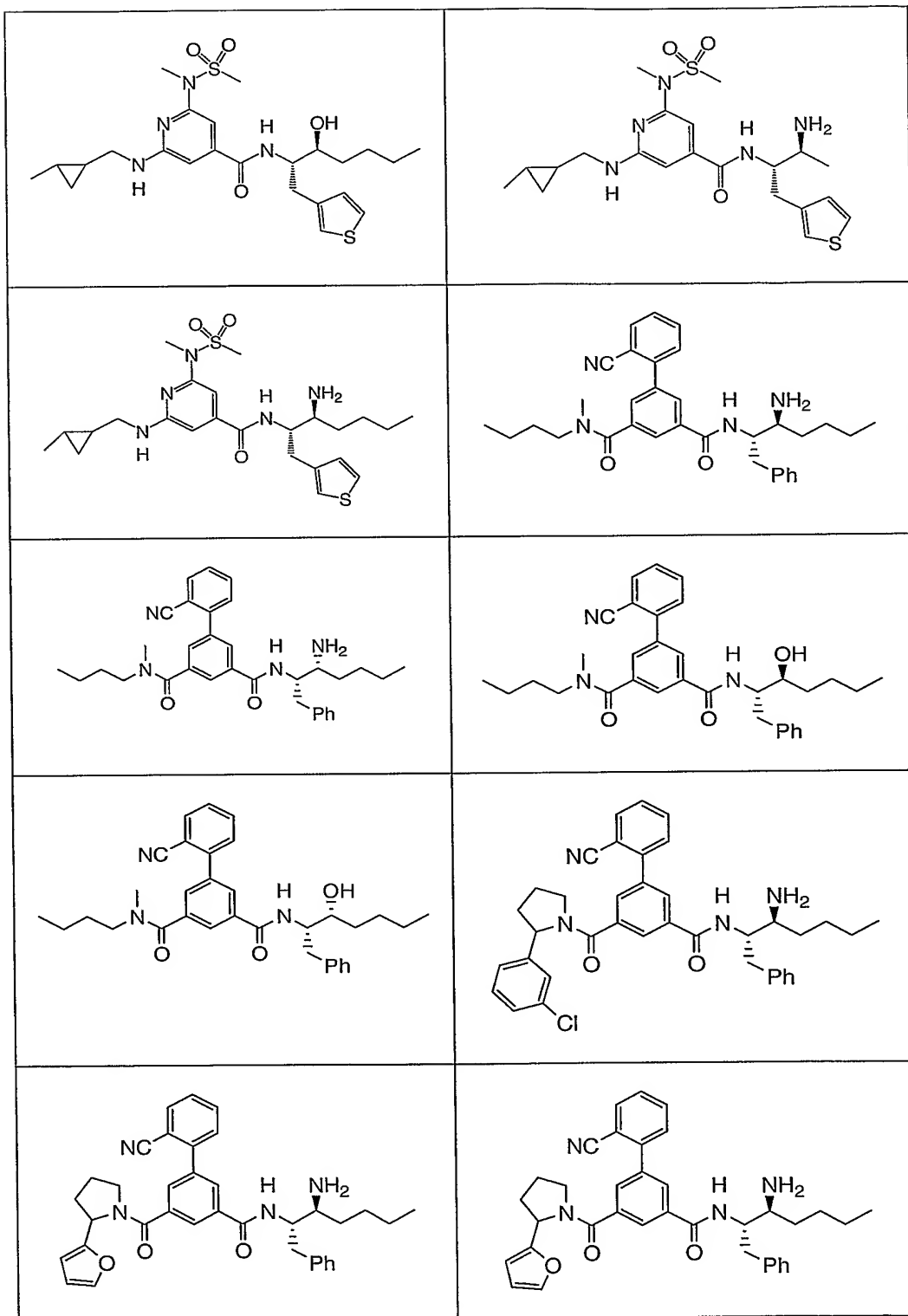
- 15 16. A compound of claim 1 is selected from the group consisting of

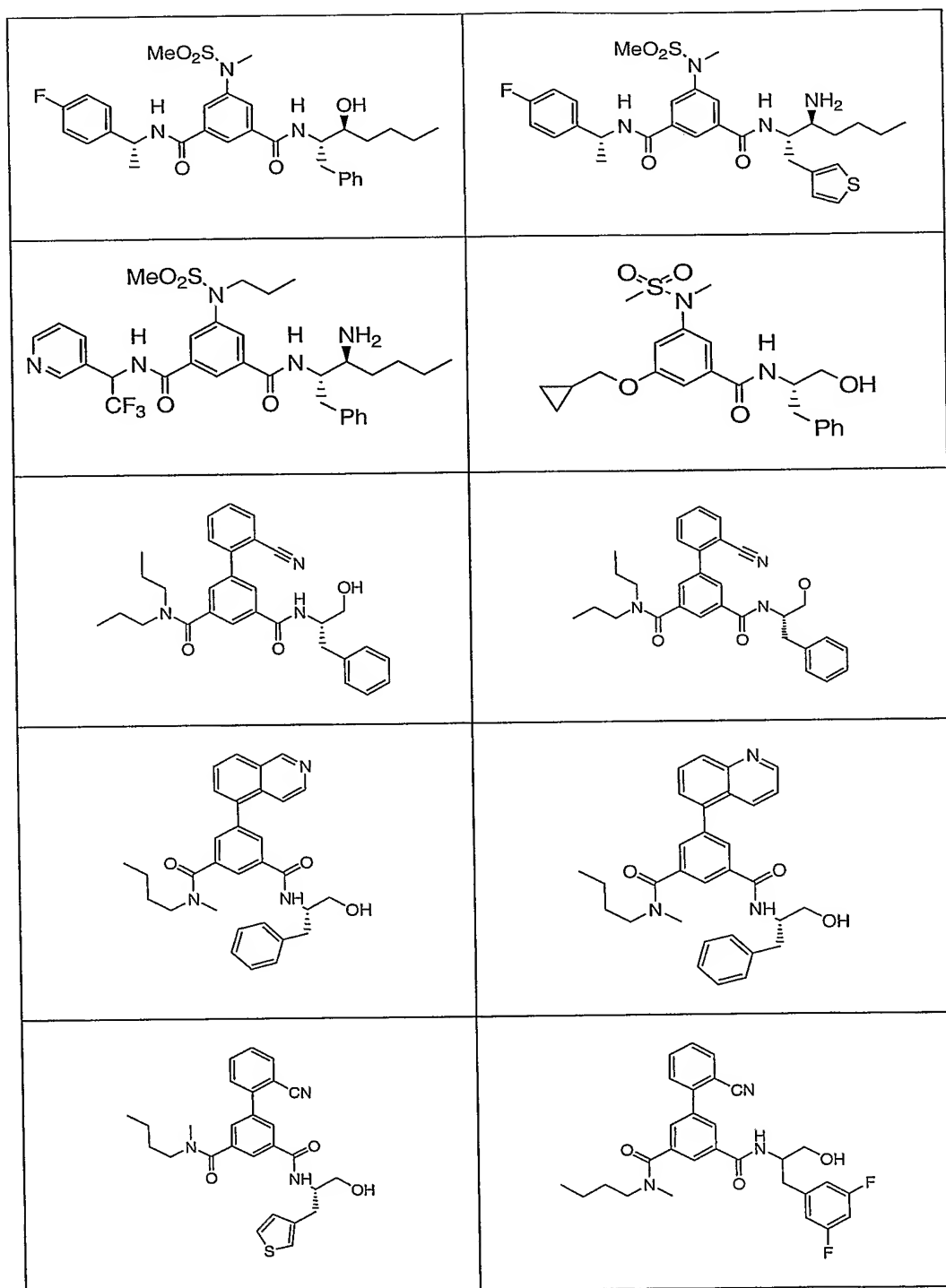


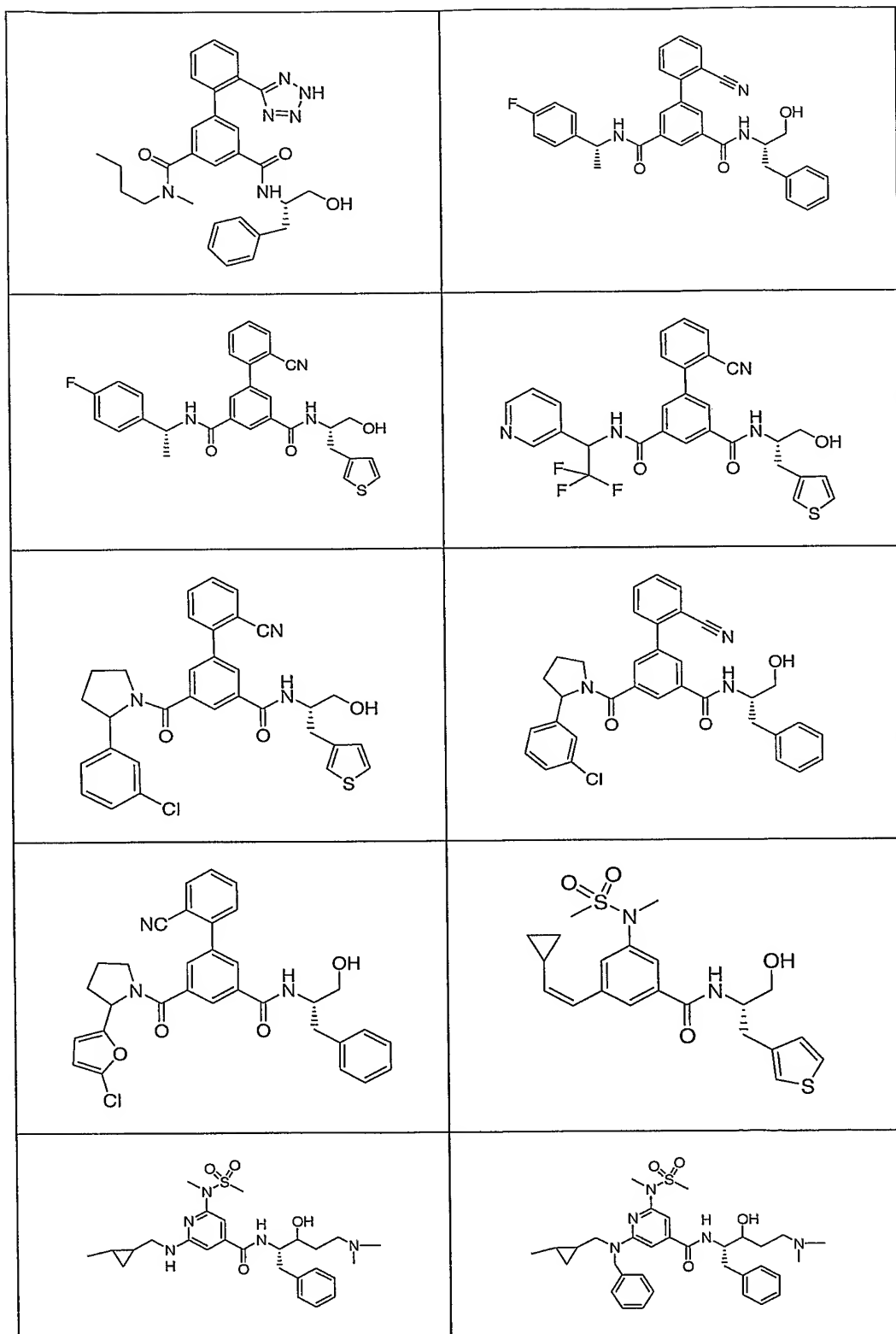


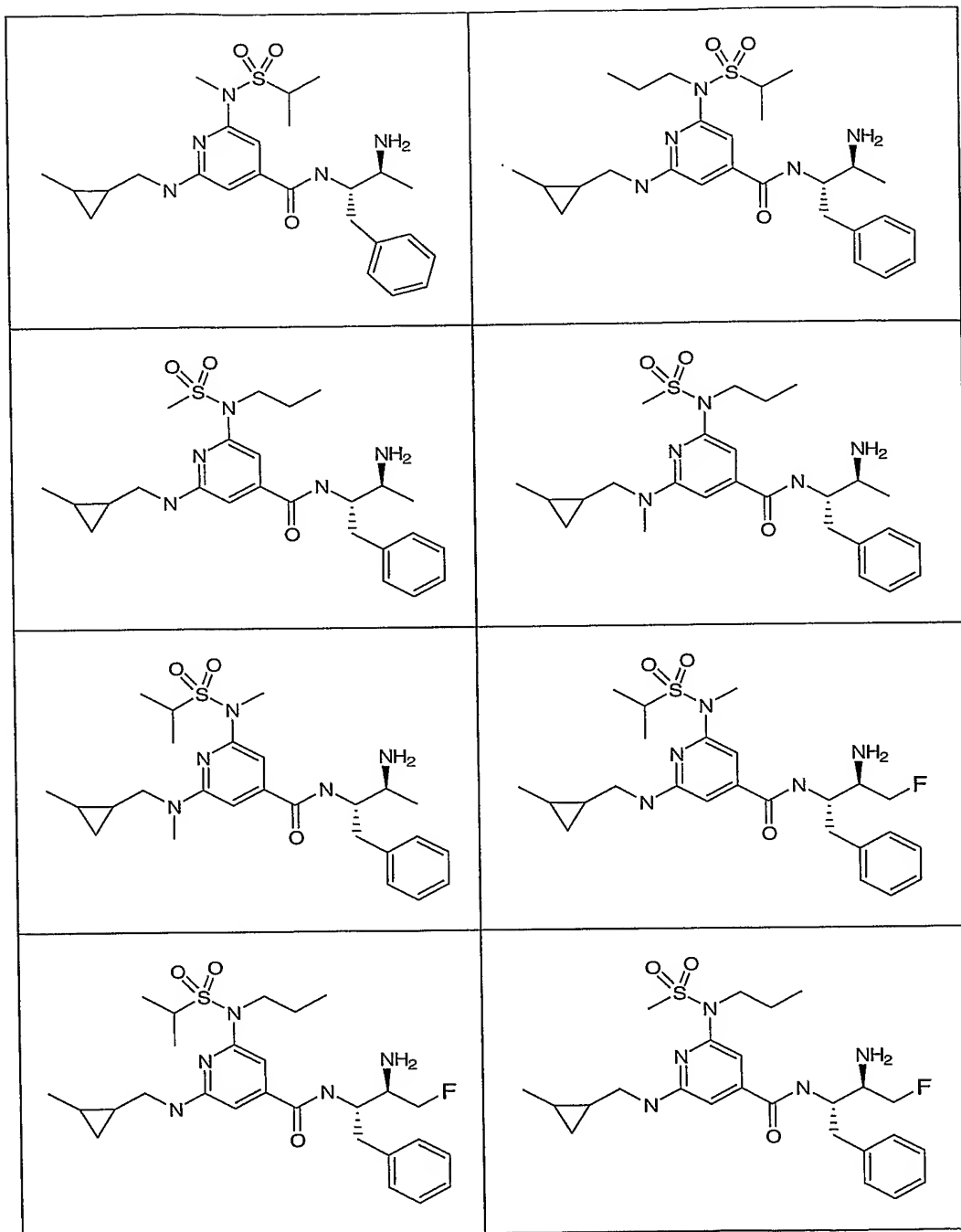


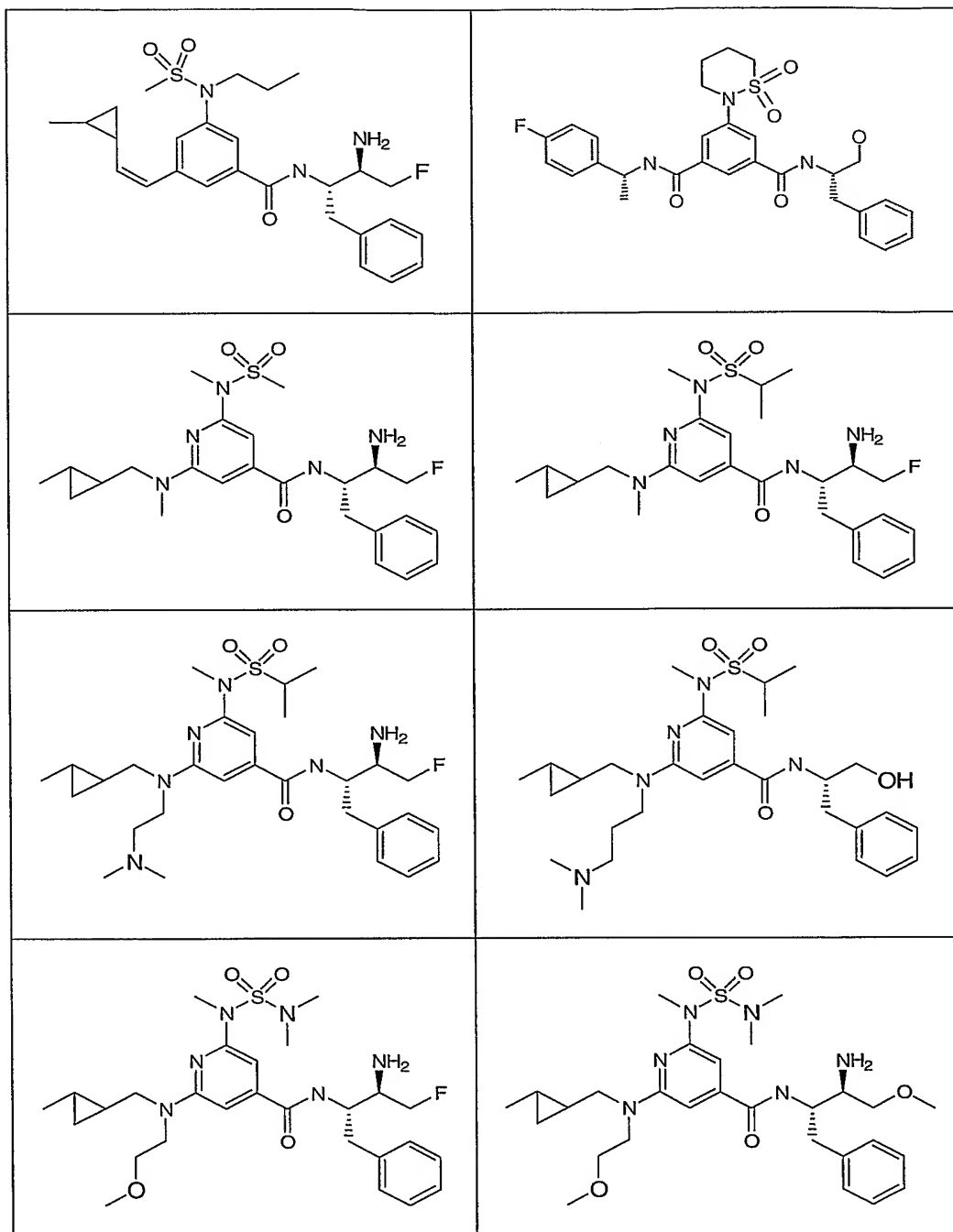


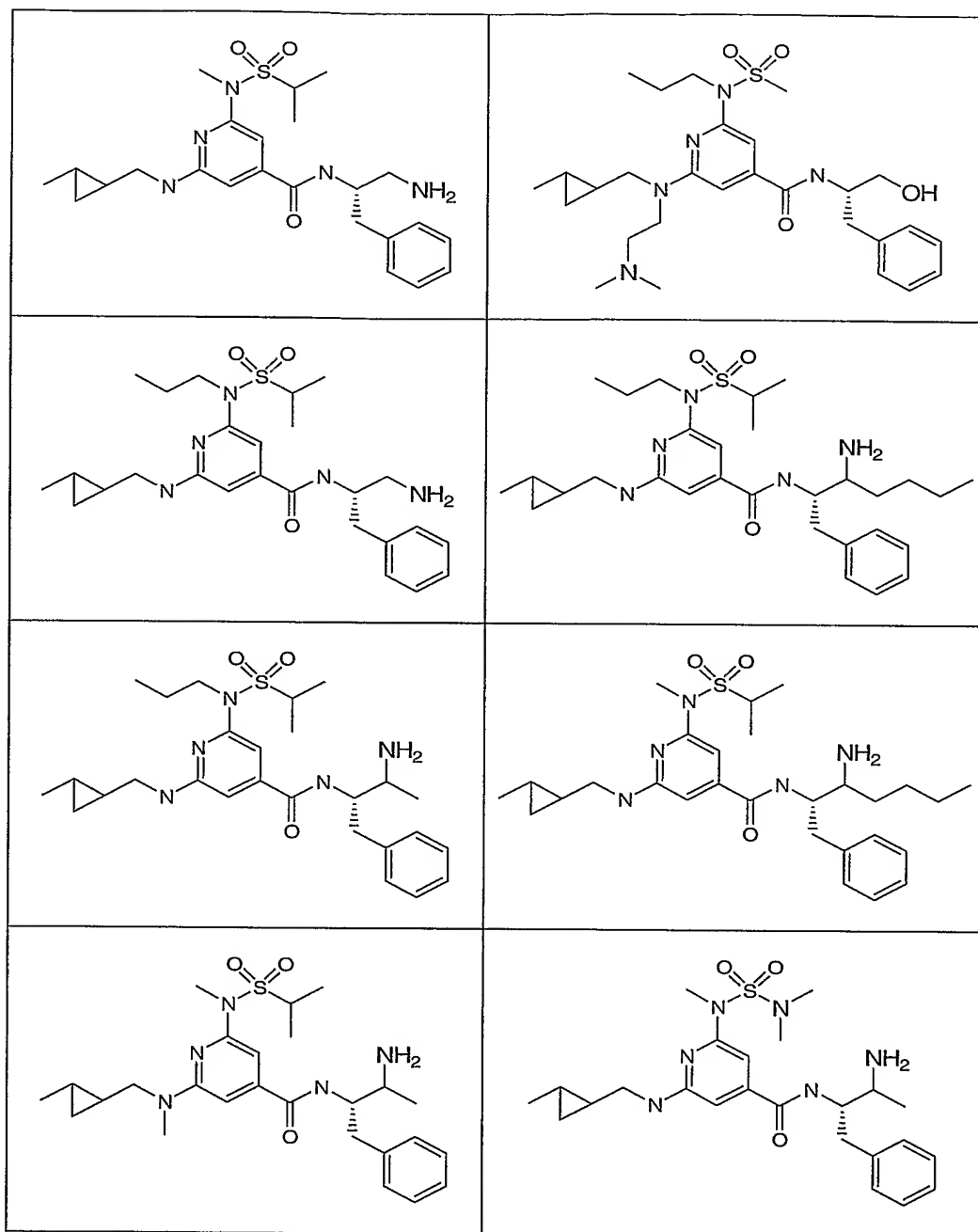


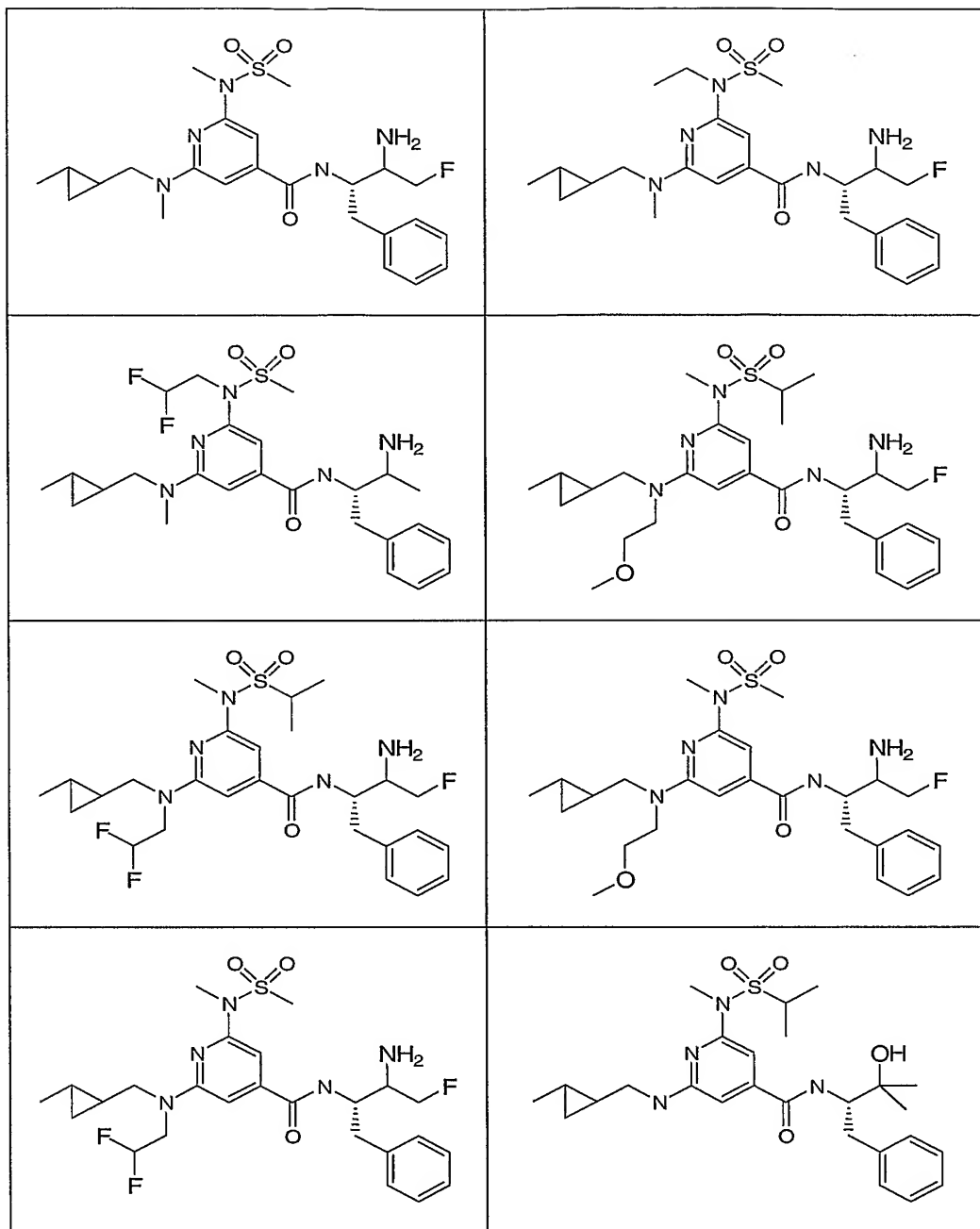


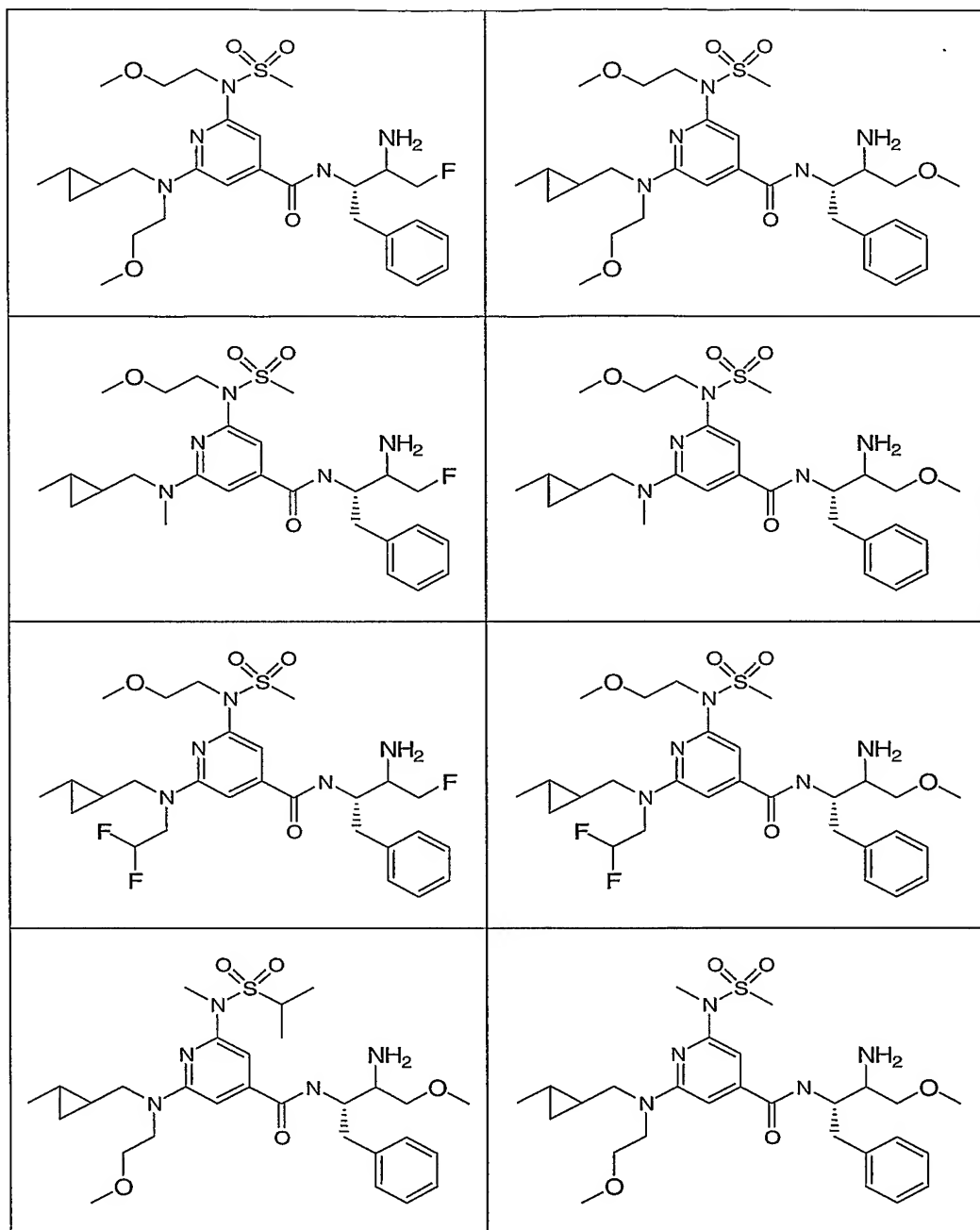


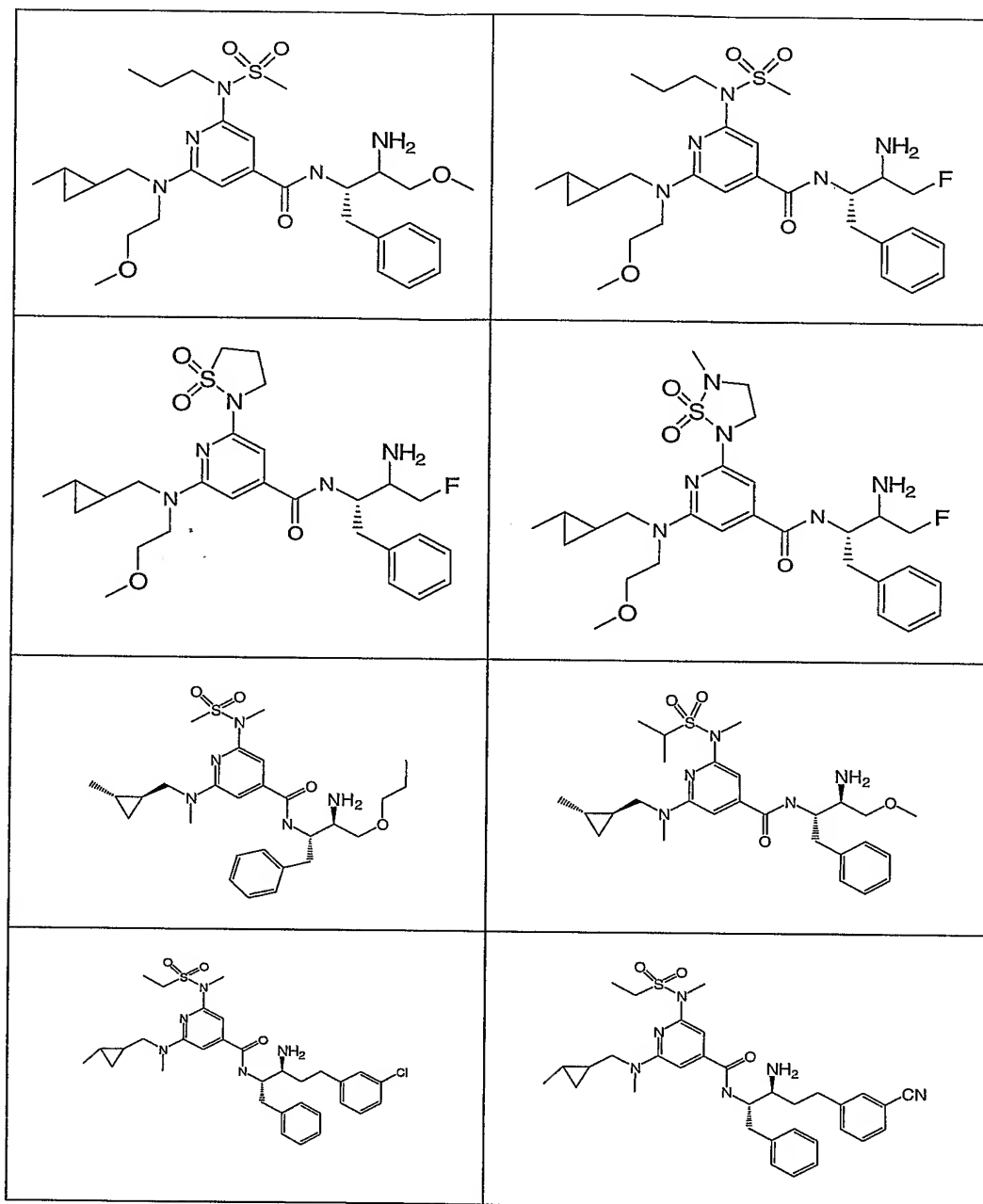


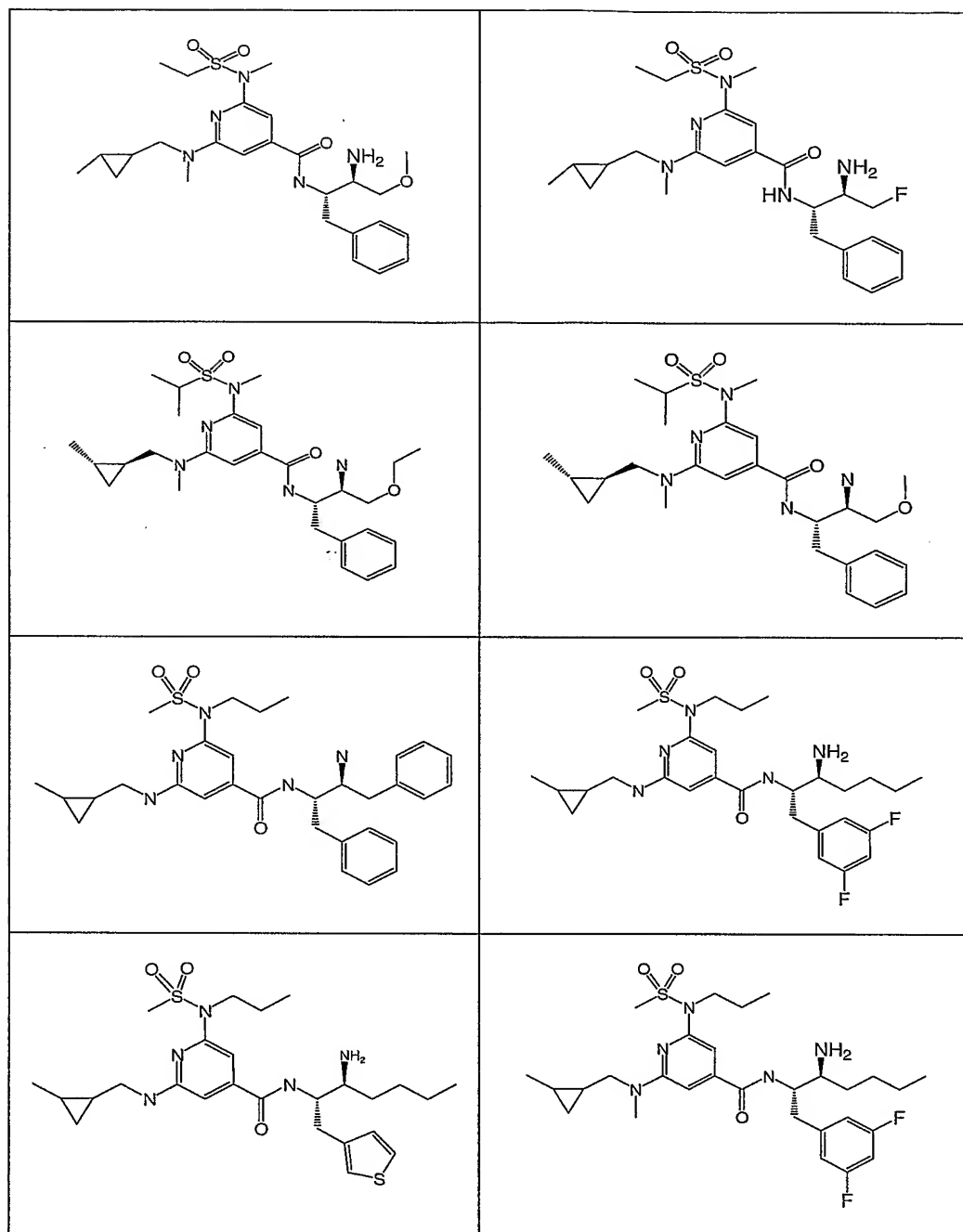


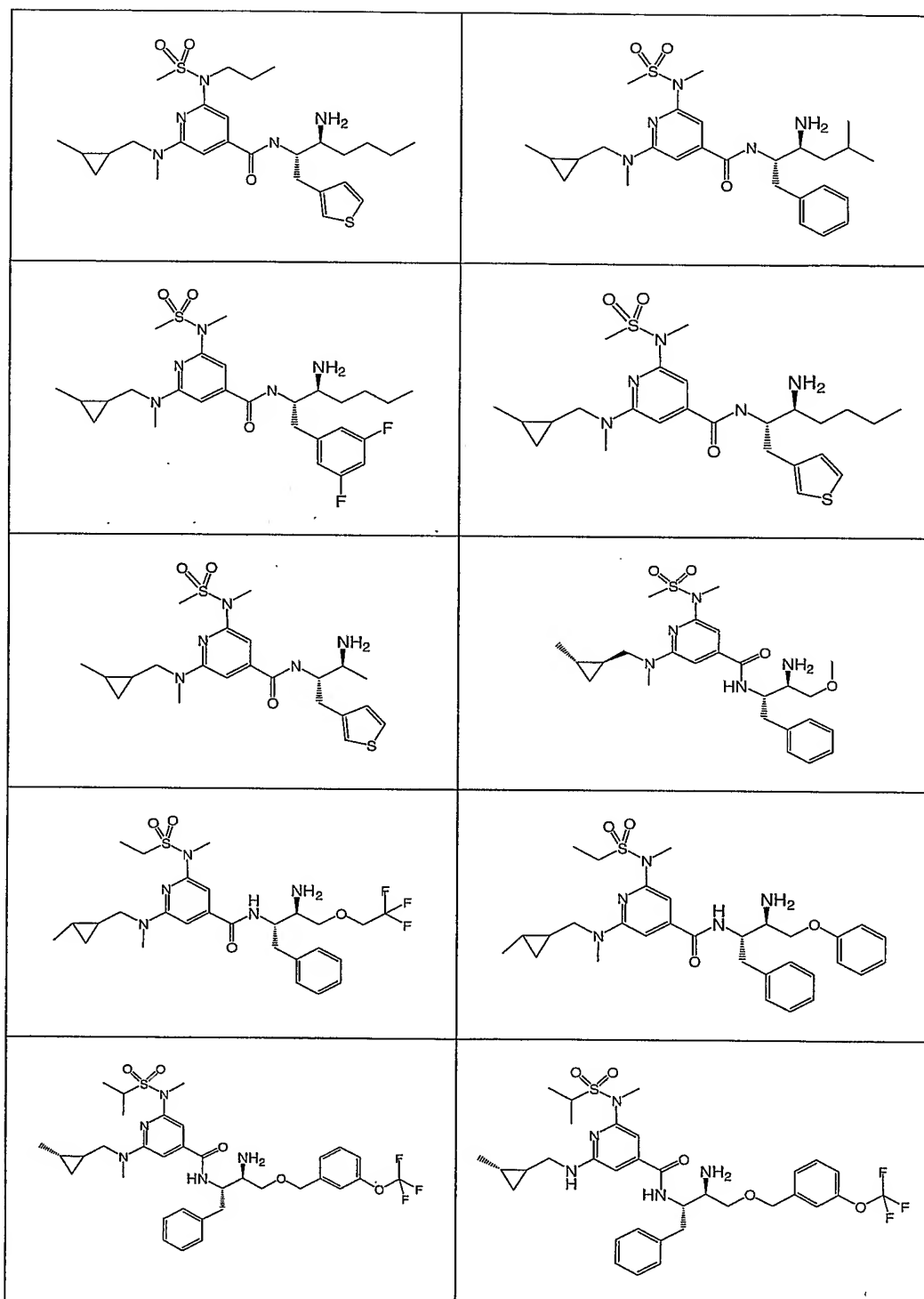


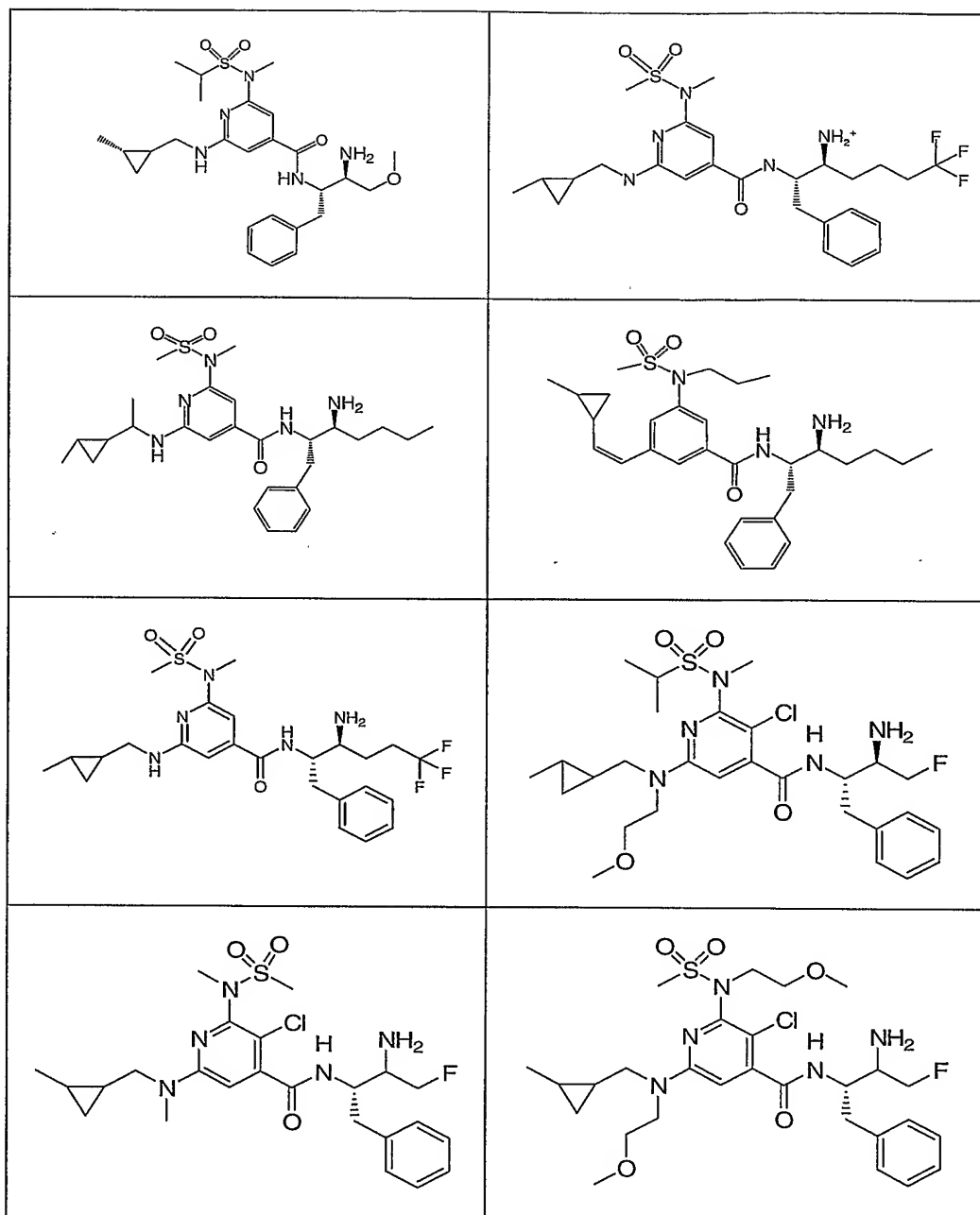


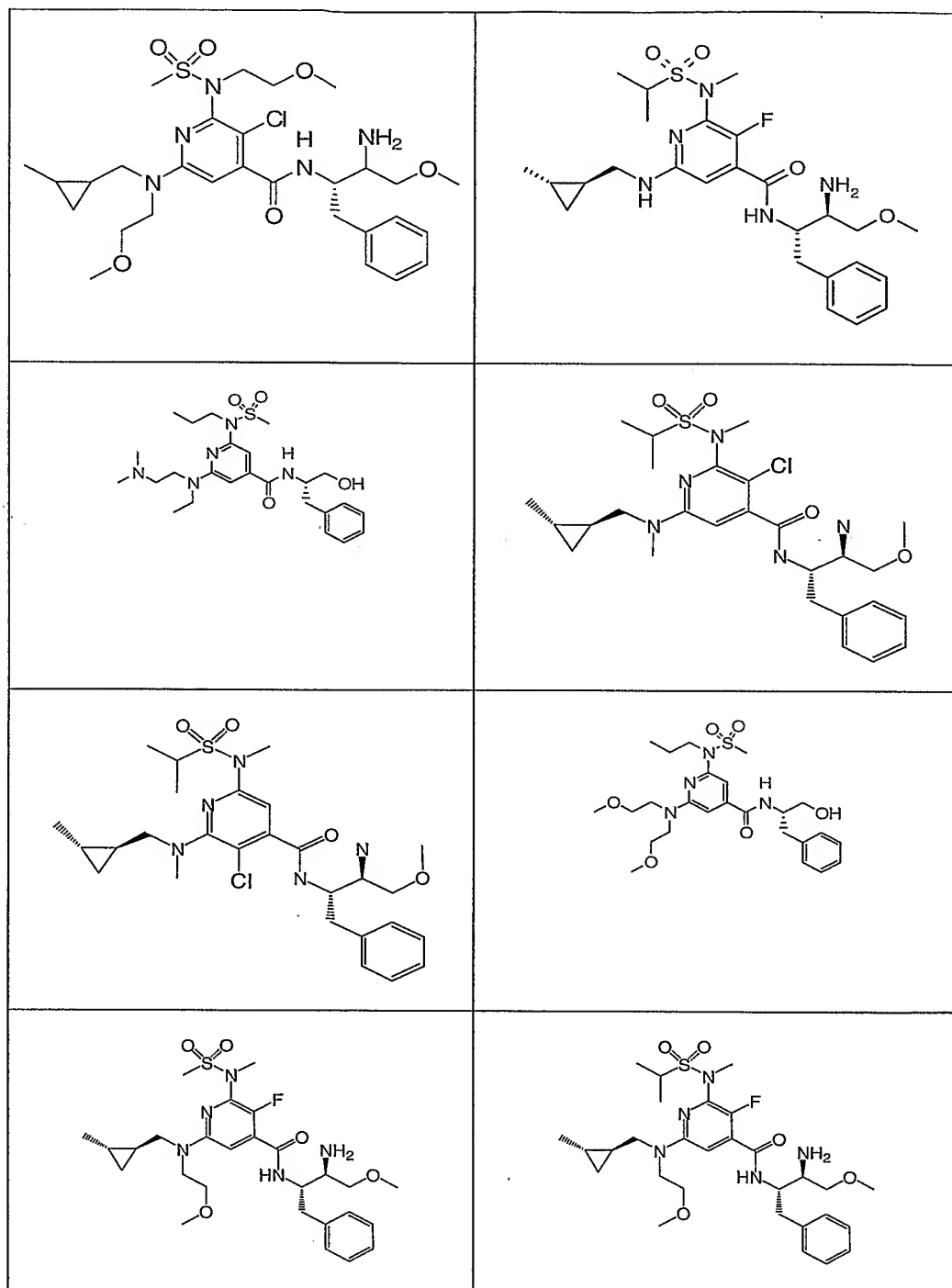












and pharmaceutically acceptable salts thereof.

17. A pharmaceutical composition comprising a therapeutically effective amount of a compound of Claim 1 and a pharmaceutically acceptable carrier.

5 18. A method for inhibition of β -secretase activity in a mammal in need thereof which comprises administering to the mammal a therapeutically effective amount of a compound of Claim 1.

19. A method for treating Alzheimer's disease in a patient in need thereof comprising administering to the patient a therapeutically effective amount of a compound of Claim 1.

10 20. A method for ameliorating or controlling Alzheimer's disease in a patient in need thereof comprising administering to the patient a therapeutically effective amount of a compound of Claim 1.